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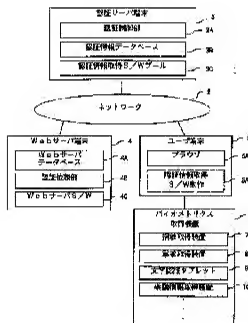
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(54) REMOTE AUTHENTICATION SYSTEM



(57)Abstract:

PROBLEM TO BE SOLVED: To provide a remote authentication system capable of surely judging the identification an individual and the presence/absence of his access right and substantially improving handleability at the time of authenticating the individual by using obtained biometrics information and key inputted user identification information corresponding to the operation of a prescribed authentication information acquisition software.

SOLUTION: In a Web system 1, authentication is performed by biometrics information. In this case, corresponding to an accessing user terminal 5, a data kind as access information, an authentication request part 4B operated in a Web server terminal 4 as a client of the authentication, the environment of a Web server S/W4C being an application in use and authentication history (authentication time state), an authentication information obtaining S/W for dynamically obtaining the information required for the authentication is selected. Thus,

identification of an individual and the presence/absence of his access right are surely judged corresponding to the environment.

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CLAIMS

[Claim(s)]

[Claim 1] In the remote authentication system which attests the user who a user terminal is connected to a network with an authentication server and an authentication client, respectively, and accesses the above-mentioned authentication client through the above-mentioned user terminal At least 1 or two or more kinds of biometrics acquisition equipments are connected to the above-mentioned user terminal. Or 1 or two or more authentication information acquisition software according to the above-mentioned user are stored. the above-mentioned authentication server -- the above-mentioned user terminal -- and -- Or it responds to actuation of the predetermined authentication information acquisition software according to the above-mentioned user. the above-mentioned user terminal downloaded from the above-mentioned authentication server on the occasion of authentication -- and -- the biometrics information acquired with the above 1 or two or more kinds of biometrics acquisition equipments -- and -- or the remote authentication system characterized by using the user-identification information which it keyed.

[Claim 2] In the remote authentication system which attests the user who a user terminal is connected to a network with an authentication server, respectively, and accesses the above-mentioned user terminal At least 1 or two or more kinds of biometrics acquisition equipments are connected to the above-mentioned user terminal. Or 1 or two or more authentication information acquisition software according to the above-mentioned user are stored. the above-mentioned authentication server -- the above-mentioned user terminal -- and -- Or it responds to actuation of

the predetermined authentication information acquisition software according to the above-mentioned user. the above-mentioned user terminal downloaded from the above-mentioned authentication server on the occasion of authentication -- and -- the biometrics information acquired with the above 1 or two or more kinds of biometrics acquisition equipments -- and -- or the remote authentication system characterized by using the user-identification information which it keyed.

[Claim 3] The remote authentication system according to claim 1 or 2 characterized by having the authentication information acquisition software which has the procedure in which the above-mentioned user chooses whether it uses any they are among two or more above-mentioned biometrics acquisition equipments connected to the above-mentioned user terminal, and inputs as the above-mentioned biometrics information.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the system which judges existence of specification of an individual and the access privilege to that individual's information and application intensively at one authentication server terminal by biometrics in a remote authentication system.

[0002]

[Description of the Prior Art] Conventionally, in the information processing system connected to the network, authentication makes [specify an individual and] a judgment of this individual's access permission, and disapproval for a security protection, namely, is required. Moreover, in the cash dispenser of a bank, individual authentication is carried out also at the time of close leaving to the authentication for accessing the dealings information of these individuals, such as specification of an individual and the credit balance, the high research location of whenever [secret], membership system crab, etc.

[0003] Specification of an individual and qualification of rating, i.e., authentication, are carried out with storage of individuals, such as a magnetic card which is the same positioning as an identification card etc. as these authentications, an IC card, and a password, and such combination, however, a password etc. -- fear of oblivion -- it is -- that, as for a magnetic card, an IC card, etc., authentication falls impossible by loss, destruction, etc. **** -- leakage of a theft or password information -- a principal -- there is a problem of except becoming completely with a principal and being attested. Moreover, although it is necessary to attest with a principal certainly in order to keep whenever [secret] high by these, that it is that much hard to remember that a password etc. is complicated or means, such as a one-time password (OTP), are used, it becomes or the authentication actuation itself becomes complicated. To carry out authentication by storage in a wide area (it is used at two or more stores of a bank), it is necessary to manage authentication information intensively, without using a magnetic card etc. furthermore.

[0004]

[Problem(s) to be Solved by the Invention] On the other hand, by the authentication using the biometrics information which is the living body-description of individuals, such as fingerprint information, palm-print information, hand information, and retina information, while canceling complicatedness, it becomes completely, and ** is difficult. When the authentication using biometrics information is required in a wide area, intensive management and authentication are

required also from the same reason as ****, and the field of privacy protection. When carrying out authentication using this biometrics information intensively, it is important to choose the suitable authentication approach with security level (secret level), such as what needs not only every user but authentication, and a location, a system, and to acquire authentication information. [0005] He is IETF () here. [Internet Engineering] RFC2138 (Remote Authentication Dial InUser Service) registered into RFC (Request ForComment) of Task Force Although the RADIUS server Following RADIUS and a front RFC 2058 are described to be by updating receives the authentication demand of a RADIUS client, performs authentication processing intensively and returns an authentication result An authentication means and authentication information were beforehand decided fixed for every user, and when biometrics information was acquired, there was a problem that an authentication means and authentication information could not be dynamically changed according to the acquisition environment.

[0006] Like the "authentication approach on a network" further shown in JP,9-81518,A as such a conventional example, when the user host has accessed the application server, an application server requests a user's authentication from an authentication server using a fixed authentication means and authentication information, and there is the authentication approach that an authentication result is received.

[0007] Moreover, although biometrics information is effective in identifying an individual, there is also a problem on acquisition sanitarily like [in the case of being accompanied by the problem, and the thing and dysphoria with dirty biometrics acquisition equipment itself of privacy protection].

[0008] In case this invention was made in order to cancel the above trouble, and it attests an individual using biometrics information, it aims at acquiring the remote authentication system and the remote authentication approach which may improve user-friendliness on a target markedly while it can judge specification of an individual and the existence of this individual's access affair certainly.

[0009]

[Means for Solving the Problem] To a network the remote authentication system concerning this invention An authentication server, In the remote authentication system which attests the user to whom it connects, respectively and a user terminal accesses the above-mentioned authentication client through the above-mentioned user terminal with an authentication client At least 1 or two or more kinds of biometrics acquisition equipments are connected to the above-mentioned user terminal. Or 1 or two or more authentication information acquisition software according to the above-mentioned user are stored. the above-mentioned authentication server -- the above-mentioned user terminal -- and -- Or it responds to actuation of the predetermined authentication information acquisition software according to the above-mentioned user. the above-mentioned user terminal downloaded from the above-mentioned authentication server on the occasion of authentication -- and -- the biometrics information acquired with the above 1 or two or more kinds of biometrics acquisition equipments -- and -- or the user-identification information which it keyed is used.

[0010] Moreover, a user terminal is connected to a network with an authentication server, respectively, and the remote authentication system concerning the next invention is set to the remote authentication system which attests the user who accesses the above-mentioned user terminal. At least 1 or two or more kinds of biometrics acquisition equipments are connected to the above-mentioned user terminal. Or 1 or two or more authentication information acquisition software according to the above-mentioned user are stored. the above-mentioned authentication

server -- the above-mentioned user terminal -- and -- Or it responds to actuation of the predetermined authentication information acquisition software according to the above-mentioned user. the above-mentioned user terminal downloaded from the above-mentioned authentication server on the occasion of authentication -- and -- the biometrics information acquired with the above 1 or two or more kinds of biometrics acquisition equipments -- and -- or the user-identification information which it keyed is used.

[0011] The remote authentication system which furthermore starts the next invention is equipped with the authentication information acquisition software which has the procedure in which the above-mentioned user chooses whether it uses any they are among two or more above-mentioned biometrics acquisition equipments connected to the above-mentioned user terminal, and inputs as the above-mentioned biometrics information.

[0012]

[Embodiment of the Invention] With reference to a drawing, the gestalt of implementation of this invention is explained in full detail below.

[0013] The configuration of the gestalt 1 of operation at the time of applying this invention to the Web system 1 at gestalt 1, drawing 1 of operation is shown. The authentication server terminal 3, the authentication client terminal 4 (this example Web server terminal), and user-terminal 5 grade are connected on a network 2. When Web server 4 is accessed through a user terminal 5 from a user by such Web system 1, the user's personal authentication is received from the authentication server terminal 3, and its service is given to a user by the result.

[0014] The authentication server terminals 3 are computer apparatus (what has CPU, memory, a disk, the communications control section, etc. as a configuration is shown hereafter) which store authentication control-section 3A, authentication information database 3B, and authentication information acquisition software pool (software is hereafter described to be S/W) 3C, such as a personal computer and a workstation. Moreover, the Web server terminals 4 are computer apparatus with which Web server database 4A, and authentication request section 4B and Web server S/W4C to be attested [of a user] operate, such as a personal computer and a workstation.

[0015] User-terminal equipment 5 is browser 5A which displays the information on the Web server terminal 4, and computer apparatus with which authentication information acquisition S/W5B operates, such as a personal computer and a workstation. Moreover, biometrics acquisition equipment 6 is connected to user-terminal equipment 5. Biometrics acquisition equipment 6 shows the retina information acquisition equipment 10 grade which acquires the retina information on the body as biometrics information with the fingerprint acquisition equipment 7 which acquires the fingerprint and palm-print information on the body as biometrics information by an image processing etc., palm-print acquisition equipment 8, the character recognition tablet 9 which acquires the hand information which the user drew as biometrics information, an eyegrounds scan, etc.

[0016] The flow of the authentication processing in such a Web system 1 is shown in drawing 2 . Browser 5A which is operating with user-terminal equipment 5 first and which is application explains the case (SP1) where the information on high Web server database 4A of whenever [secrecy / of the Web server terminal 4 / in which a user is the client of authentication] is accessed. Web server S/W4C which is performing the access control of the high information on whenever [secrecy] and which is application needs to perform user authentication, in order for whether this user has an access permission to judge (SP10).

[0017] That is, Web server S/W4C of the Web server terminal 4 notifies being attested [of a user] to authentication request section 4B with Client ID (identifier of the authentication request

section), Application ID (identifier of Web server S/W4C which is the application which needs authentication), and access data classification (secret level of the data which the user has accessed) (SP11). Authentication request section 4B transmits an authentication demand of a user including the above-mentioned information to the authentication server terminal 3.

[0018] Authentication control-section 3A of the authentication server terminal 3 which received the authentication demand of a user chooses authentication information acquisition S/W11 from the authentication client ID, Application ID, and access data classification (SP20). The authentication information acquired, respectively was decided and authentication information acquisition S/W11 also has authentication information acquisition S/W11 which acquires two or more authentication information. Authentication control-section 3A transmits selected authentication information acquisition S/W11 to the Web server terminal 4 which is the client of authentication (SP21).

[0019] Authentication request section 4B of the Web server terminal 4 hands over authentication information acquisition S/W11 transmitted to Web server S/W4C, acquisition of authentication information is directed from a user, and authentication information acquisition S/W11 is transmitted to a user terminal 5 from Web server S/W4C by the directions (SP12).

[0020] As for browser 5A of a user terminal 5, transmitted authentication information acquisition S/W11 operates reception and this authentication information acquisition S/W11 as authentication information S/W5B (SP2). Authentication information S/W acquires the authentication information usually spontaneously used by the conventional computer systems, such as biometrics information, such as acquisition of user ID (an identifier, a firm, a personnel number, affiliation, an address, a telephone, etc. and ID currently assigned for every individual by the system), fingerprint information and palm-print information, hand information, and retina information, a password, and a one-time password. It may operate in harmony with other S/W, such as a driver which acquires authentication information at this time. Authentication information acquisition S/W5B transmits the user ID and authentication information which were acquired to the Web server terminal through browser 5A (SP3).

[0021] Authentication request section 4B of the Web server terminal 4 transmits the user ID and authentication information which were acquired from the user to the authentication server terminal 3 through Web server S/W4C (SP13). Using the user ID and authentication information which were transmitted, authentication control-section 3A of the authentication server terminal 3 carries out user authentication (SP22). Authentication information, such as biometrics information transmitted at this time, is collated with the individual humanity news accumulated in authentication information database 3B of the authentication server terminal 3 from the first. When it is judged as a principal by collating of all the transmitted authentication information, this result is notified to the Web server terminal which is the client of authentication. Moreover, if a collating result is not right, it judges that he is not a principal and notifies at least one of this (SP23).

[0022] Authentication request section 4B of the Web server terminal 4 which is the client of carrier beam authentication about an authentication result notifies the authentication result to Web server S/W4C. Web server S/W4C judges the access permission or disapproval to high information of whenever [secrecy / of a Web server database] to this user by this authentication result (SP14). For example, actuation to user access, such as displaying this extra sensitive information, is performed.

[0023] in addition -- if it enciphers between between a user terminal 5 (authentication information acquisition S/W5B) and the Web server terminal 4, the Web server terminal 4, and

the authentication server terminal 3 (authentication control-section 3A), while being able to keep authentication information secret -- ***** -- a better threat is reducible. moreover -- even if it enciphers between not between individual terminals but the user terminal 5 (authentication information acquisition S/W5B), and the authentication server terminal 3 (authentication control-section 3A) -- the same -- ***** -- a better threat is reducible.

[0024] example 1. -- selection processing of the simple example of a database structure and authentication information acquisition S/W5B is explained here using drawing 3 and drawing 4. The item of user ID, user level, and authentication information is stored in authentication information database 3B of drawing 3 as information for every individual user. User ID is an identifier, a firm, a personnel number, affiliation, an address, a telephone, etc. and ID currently assigned for every individual by the system. Moreover, user level is an access level to extra sensitive information, and authentication information is biometrics information, such as fingerprint information as authentication information on a collating agency, hand information, and retina information, password information, the information on a one-time password, etc. further.

[0025] The authentication information acquisition S/W11 grade which acquires authentication information acquisition S/W11 which acquires both fingerprint information and retina information, authentication information acquisition S/W11 which acquires two fingerprint information, fingerprint information, and hand information is stored in authentication information acquisition S/W pool 3C of drawing 4. Moreover, selectable authentication information acquisition S/W11 and data classification corresponding to secret level in authentication information acquisition S/W pool 3C are shown.

[0026] Let the case where the user has accessed information on Web server database 4C of data classification =17 first be an example as explanation of the optional feature of authentication information acquisition S/W11 of the authentication server terminal 3 in this example 1. It is referred to as authentication client ID=15 which are equivalent to the identifier of authentication request section 4B at this time, and is referred to as application ID=25 equivalent to the identifier of Web server S/W4C. Web server S/W4C notifies being attested [of a user] to data classification =17 at authentication request section 4B at the time of access generating. Authentication request section 4B transmits the above-mentioned information, data classification =17, authentication client ID=15, and an authentication demand of the user containing application ID=25 to the authentication server terminal 3. And the authentication server terminal 3 receives the authentication demand including such information.

[0027] Since the data with which authentication control-section 3A of the authentication server terminal 3 was required as the database of authentication information acquisition S/W pool 3C of drawing 4 from the data classification of the received authentication demand are level 2 whenever [secret], they get to know the selectable candidate of with a level of two or more authentication information acquisition S/W11 like a graphic display.

[0028] Some another examples of an authentication information database are explained like drawing 3 using example 2., drawing 5, and drawing 6. Here, selectable authentication information acquisition S/W11 for every authentication client ID and every application ID is shown. Authentication control-section 3A of the authentication server terminal 3 gets to know the candidate of authentication information acquisition S/W11 which can choose from the authentication client ID and can be chosen from Application ID using such information. Therefore, A, B, C, D, E, and F become a candidate, C, D, and E become a candidate by the authentication client ID, with Application ID, A, D, E, and F become a candidate and one of D

and the E is eventually chosen by data classification.

[0029] The authentication server terminal 3 from the candidate of this selectable authentication information acquisition S/W chooses selection or S/W regular fixed with means, such as selection or sequential selection, at random. According to environments, such as data classification which is access information, authentication request section 4B which is operating with the equipment which is the client of authentication, and Web server S/W4C which is the application used, an authentication means and authentication information can be flexibly chosen like this example, and the existence of specification of an individual and this individual's access privilege can be certainly judged according to an environment.

[0030] example 3. -- as a following example, user ID is contained in the authentication demand and the case where detail setting out is carried out as the authentication information database of drawing 3 shows drawing 7 is explained. The flow of this processing is shown in drawing 8 which gave the same sign to the corresponding point with drawing 2. first, the Web server terminal 4 -- user ID (an identifier, a firm, and a personnel number --) ID currently assigned for every individual by affiliation, the address, the telephone, etc. and the system is acquired. The user ID, Client ID (identifier of authentication request section 4B) which were acquired This user's authentication is requested from authentication request section 4B with Application ID (identifier of Web server S/W4C which is the application which needs authentication), and access data classification (secret level of the data which the user has accessed).

[0031] When the authentication information database 3B of drawing 7 is attested with a user's classification (data administrator, general user, etc.), the authentication client ID which can be used, the application ID which can be used, and a principal, the selection situation of authentication information acquisition S/W to the past count of convention authentication and the information for every user individuals, such as a rate of collating, the total count of authentication, and a selection criterion, are added to the authentication information database of drawing 3 as the control information of the application handed over by application and a collating log.

[0032] When user ID is contained in the authentication demand, it chooses in accordance with the selection criterion of the applicable user of drawing 7. It is user ID=1 as an example, and, as for others, in the case of data classification=17, authentication client ID=15, and application ID=25 as well as a front example, authentication request section 4B transmits an authentication demand of the user who contains user ID=1, data classification=17, authentication client ID=15, and application ID=25 as the above-mentioned information to the authentication server terminal 3.

[0033] And the authentication server terminal 3 receives the authentication demand including such information. A, B, C, D, E, and F become a candidate by data classification like ****, C, D, and E become a candidate by the authentication client ID, by Application ID, A, D, E, and F become a candidate and one of D and the E is chosen eventually. Moreover, user ID = since it is 1, authentication control-section 3A chooses by the total count of authentication, the 1st time of the total count of authentication -- D and the 2nd time -- E3 time -- D and 4timeE as -- it chooses, here -- user ID=1 -- the total -- by count --of authentication 20, since it is the 21st time this time, D of authentication information acquisition S/W11 is chosen.

[0034] If the authentication client ID which can be used for authentication information database 3B for every user, and the application ID which can be used have assignment as shown in other examples. and drawing 7, only while using the authentication client and application which were specified, the access control of sending authentication information acquisition S/W11 to this user

can be realized. Here, since 15 is in the client ID which can be used and 25 is in the application ID which can be used, sending of authentication information acquisition S/W11 is permitted.

[0035] Moreover, the propriety of sending of authentication information acquisition S/W11 can be judged also by user classification shown in drawing 7. If secret level is furthermore similarly assigned to an authentication client and application with a user, the authentication server terminal 3 can choose authentication information acquisition S/W11 from the level of an authentication client, the level of application, and the level of access data classification at the time of selection of authentication information acquisition S/W11. That is, control which is chosen from authentication information acquisition S/W11 more than the highest level in three, for example can be performed.

[0036] Although it is the same as that of **** after sending of authentication information acquisition S/W11, since user ID is already acquired, the places to which only authentication information is transmitted differ. Moreover, when attested with the principal of drawing 7, the Web server terminal 4 can also realize a variegated access control using Key-1 which is the control information of the application handed over by application.

[0037] Furthermore, when a selection criterion replaces with this although the selection criterion was the total count of authentication in **** as an example of the rate of collating of drawing 7, and a selection criterion considers as collating assessment, in with a level of two or more authentication information acquisition S/W11, the highest thing of the past collating assessment is looked for from this user's collating log, and it is chosen. Here, since collating assessment of the last E is the highest, E is chosen.

[0038] Moreover, there is also an example which omits the authentication acquisition S/W transfer to an authentication client from the authentication server terminal 3. When authentication information acquisition S/W is decided by the case of the Web system 1 mentioned above fixed, the Web server terminal 4 of an authentication client acquires authentication information acquisition S/W11 beforehand, and you may make it transmit the authentication information acquisition S/W11 without a transfer of authentication information acquisition S/W to the Web server terminal 4 of an authentication client from the authentication server terminal 3 in it at a user terminal 5 with the Web server terminal 4 which is an authentication client.

[0039] As mentioned above, it sets to this Web system 1. The user who has accessed when attesting using biometrics information, The data classification which is access information, and authentication request section 4B which is operating at the Web server terminal 4 which is the client of authentication, The existence of specification of an individual and this individual's access privilege can be certainly judged according to the environment by choosing authentication information acquisition S/W11 which acquires information dynamically required for authentication according to environments and authentication hysteresis (at the time of authentication condition), such as Web server S/W4C which is the application used.

[0040] gestalt 2. of operation -- the gestalt 1 of operation is simplified in the gestalt 2 of this operation. Drawing 9 which gave the same sign to the corresponding point with drawing 1 has the user terminal which acquires biometrics information, and the same terminal of an authentication client. They are computer apparatus with which local database 5C which there is database retrieval application 5E which performs database retrieval as an example of application to be attested, and database retrieval application 5E uses, authentication request section 5D, and database retrieval application 5E to be attested [of a user] and authentication information acquisition S/W11 operate, such as a personal computer and a workstation. It connects with the

user terminal 5, and it is the completely same configuration as the gestalt 1 of operation mentioned above, and biometrics acquisition equipment 6 is the completely same configuration as the gestalt 1 of the operation which also mentioned the authentication server terminal 3 above. [0041] In drawing 10 which is fundamentally the same as the gestalt 1 of above-mentioned operation, and gave the same sign to the corresponding point with drawing 2 and drawing 8 database retrieval application 5E In case it accesses to the extra sensitive information of local database 5C, (SP5), User ID (an identifier, a firm, a personnel number, affiliation, an address, a telephone, etc. and ID currently assigned for every individual by the system) is acquired first (SP6). The user ID, Client ID (identifier of authentication request section 5D) which were acquired This user's authentication is requested from authentication request section 5D with Application ID (identifier of database retrieval application 5E which is the application which needs authentication), and access data classification (secret level of the data which the user has accessed) (SP7).

[0042] Actuation of the authentication server terminal 3 is the same as the gestalt 1 of operation, authentication processing is performed, and authentication request section 5D of the user terminal 5 which is the client of carrier beam authentication about an authentication result notifies the authentication result to database retrieval application 5E. Database retrieval application 5E judges whether access to the high information on whenever [secrecy / of local database 5C] is permitted to this user by this authentication result (SP8). For example, actuation to user access, such as displaying this extra sensitive information, is performed. According to such a configuration, a user terminal 5 can acquire the same effectiveness as the gestalt 1 of operation mentioned above in the configuration which advances an authentication request.

[0043] gestalt 3. of operation -- with the gestalt 3 of this operation, in drawing 2 and drawing 11 which gave the same sign to the corresponding point with drawing 8 , when the personal authentication information specified by authentication information acquisition S/W11 transmitted from the authentication server 3 does not suit a user's intention, the procedure (SP2B, SP12A) in which a user refuses applicable authentication information acquisition S/W is shown. The authentication server terminal 3 with which acquisition was refused reselects other authentication information acquisition S/W (SP20A). However, it is the case where there is other authentication information acquisition S/W which can reselect as mentioned above about drawing 4 .

[0044] When accompanied by a thing and dysphoria with the specified biometrics acquisition equipment 6 dirty when using biometrics as individual authentication information, a user does refusal. Although biometrics is effective in identifying an individual, the problem of privacy protection and the opportunity for a user to also refuse or change a sanitary problem for a certain reason are indispensable as mentioned above.

[0045] Moreover, also when biometrics acquisition equipment 6 cannot trust it in security, even if there is the intention to say that he wants to specify alternative means, such as a one-time password (OTP), even if complicated [other than biometrics information] and it follows the intention of refusal of a user or modification, the effectiveness that the existence of specification of an individual and this individual's access privilege can be certainly judged according to the environment can acquire by choosing authentication information acquisition S/W which acquires information dynamically required for authentication.

[0046] As a means to acquire the same effectiveness as the gestalt 3 of gestalt 4. implementation of operation, the optional feature of acquisition authentication information is included in authentication information acquisition S/W of the gestalten 1 and 2 of operation itself. In the

example of the gestalt 1 of operation, what carries out authentication implementation for the fingerprint and hand information on D, and the thing to attest only with the fingerprint of E can be chosen as authentication information acquisition S/W which can be chosen. At this time, the places to which authentication information acquisition S/W which an authentication server combines with the authentication information acquisition function of D and E both is transmitted differ.

[0047] The configuration and operations sequence of Web system 1 the very thing are the same as that of the gestalten 1 and 2 of operation. The screen image of authentication information acquisition S/W by the side of a user is shown in drawing 12 . A user chooses either from D/E and acquires his own [an authentication means and] authentication information. If it chooses any of the selection carbon buttons 12A and 12B of a screen they are, authentication information acquisition S/W will operate, and authentication information chosen actually is acquired. At the authentication server terminal 3, with the classification of the sent authentication information, it can judge whether it can attest in the group of the sent information, and the same effectiveness as the gestalt 3 of operation can be acquired.

[0048] Although the authentication information acquired by authentication information acquisition S/W was determined with the gestalten 1-4 of the gestalt 5. above-mentioned operation of operation, it is good even if like [which the authentication information acquired not on authentication information acquisition S/W but on a screen is shown]. For example, at the time of the count of authentication of the detail database of the gestalt 1 of operation, it is displayed that fingerprint information and hand information are sent to a screen. Thereby, a user operates the software which acquires authentication information spontaneously according to the displayed content, and sends the acquired authentication information to the authentication server terminal 3.

[0049] Moreover, you may make it display that the authentication information which was not shown concretely but was beforehand decided by the display is sent. In this case, the software with which a user acquires authentication information for all the authentication information beforehand notified in advance by storage of a user from the manager etc. to the user separately spontaneously is operated, and the acquired authentication information is sent to an authentication server. If it does in this way, the same effectiveness as the gestalt 1 of above-mentioned operation is realizable, but in a display, since a means to acquire serves as treatment like a password when sending the authentication information which was not shown concretely but was decided beforehand, security can be improved much more.

[0050] In addition, in the gestalten 1-4 of above-mentioned operation, in the Web server terminal 4, although the case where a user's personal authentication was performed was described, it is widely applicable [this invention] to the general control unit which needs a user's personal authentication like the close leaving terminal unit connected not only to this but to the network.

[0051]

[Effect of the Invention] As above-mentioned, according to this invention, in case it attests using biometrics information, although an authentication server chooses biometrics acquisition equipment and authentication information freely and acquires them according to the acquisition environment of a user's biometrics information, it is made, and can realize the remote authentication system which can judge the existence of specification of a user and that user's access privilege certainly in this way.

[0052] Moreover, a user can change and refuse the authentication information acquired when there is dissatisfaction about acquisition of the specified authentication information, and even

when the equipment which acquires the case where biometrics acquisition equipment is accompanied by displeasure by dirty **, and biometrics information is not reliable, he can judge the existence of specification of a user and the user's access privilege certainly certain in this way with an alternative means.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the system which judges existence of specification of an individual and the access privilege to that individual's information and application intensively at one authentication server terminal by biometrics in a remote authentication system.

PRIOR ART

[Description of the Prior Art] Conventionally, in the information processing system connected to the network, authentication makes [specify an individual and] a judgment of this individual's access permission, and disapproval for a security protection, namely, is required. Moreover, in the cash dispenser of a bank, individual authentication is carried out also at the time of close leaving to the authentication for accessing the dealings information of these individuals, such as specification of an individual and the credit balance, the high research location of whenever [secret], membership system crab, etc.

[0003] Specification of an individual and qualification of rating, i.e., authentication, are carried out with storage of individuals, such as a magnetic card which is the same positioning as an identification card etc. as these authentications, an IC card, and a password, and such combination. however, a password etc. -- fear of oblivion -- it is -- that, as for a magnetic card, an IC card, etc., authentication falls impossible by loss, destruction, etc. **** -- leakage of a theft or password information -- a principal -- there is a problem of except becoming completely with a principal and being attested. Moreover, although it is necessary to attest with a principal certainly in order to keep whenever [secret] high by these, that it is that much hard to remember that a password etc. is complicated or means, such as a one-time password (OTP), are used, it becomes or the authentication actuation itself becomes complicated. To carry out authentication by storage in a wide area (it is used at two or more stores of a bank), it is necessary to manage authentication information intensively, without using a magnetic card etc. furthermore.

EFFECT OF THE INVENTION

[Effect of the Invention] As above-mentioned, according to this invention, in case it attests using biometrics information, although an authentication server chooses biometrics acquisition equipment and authentication information freely and acquires them according to the acquisition environment of a user's biometrics information, it is made, and can realize the remote authentication system which can judge the existence of specification of a user and that user's access privilege certainly in this way.

[0052] Moreover, a user can change and refuse the authentication information acquired when there is dissatisfaction about acquisition of the specified authentication information, and even when the equipment which acquires the case where biometrics acquisition equipment is accompanied by displeasure by dirty **, and biometrics information is not reliable, he can judge

the existence of specification of a user and the user's access privilege certainly certain in this way with an alternative means.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] On the other hand, by the authentication using the biometrics information which is the living body-description of individuals, such as fingerprint information, palm-print information, hand information, and retina information, while canceling complicatedness, it becomes completely, and ** is difficult. When the authentication using biometrics information is required in a wide area, intensive management and authentication are required also from the same reason as ****, and the field of privacy protection. When carrying out authentication using this biometrics information intensively, it is important to choose the suitable authentication approach with security level (secret level), such as what needs not only every user but authentication, and a location, a system, and to acquire authentication information.

[0005] He is IETF () here. [Internet Engineering] RFC2138 (Remote Authentication Dial InUser Service) registered into RFC (Request ForComment) of Task Force Although the RADIUS server Following RADIUS and a front RFC 2058 are described to be by updating receives the authentication demand of a RADIUS client, performs authentication processing intensively and returns an authentication result An authentication means and authentication information were beforehand decided fixed for every user, and when biometrics information was acquired, there was a problem that an authentication means and authentication information could not be dynamically changed according to the acquisition environment.

[0006] Like the "authentication approach on a network" further shown in JP-9-81518,A as such a conventional example, when the user host has accessed the application server, an application server requests a user's authentication from an authentication server using a fixed authentication means and authentication information, and there is the authentication approach that an authentication result is received.

[0007] Moreover, although biometrics information is effective in identifying an individual, there is also a problem on acquisition sanitarily like [in the case of being accompanied by the problem, and the thing and dysphoria with dirty biometrics acquisition equipment itself of privacy protection].

[0008] In case this invention was made in order to cancel the above trouble, and it attests an individual using biometrics information, it aims at acquiring the remote authentication system and the remote authentication approach which may improve user-friendliness on a target markedly while it can judge specification of an individual and the existence of this individual's access affair certainly.

MEANS

[Means for Solving the Problem] To a network the remote authentication system concerning this invention An authentication server, In the remote authentication system which attests the user to whom it connects, respectively and a user terminal accesses the above-mentioned authentication client through the above-mentioned user terminal with an authentication client At least 1 or two or more kinds of biometrics acquisition equipments are connected to the above-mentioned user terminal. Or 1 or two or more authentication information acquisition software according to the above-mentioned user are stored. the above-mentioned authentication server -- the above-

mentioned user terminal -- and -- Or it responds to actuation of the predetermined authentication information acquisition software according to the above-mentioned user. the above-mentioned user terminal downloaded from the above-mentioned authentication server on the occasion of authentication -- and -- the biometrics information acquired with the above 1 or two or more kinds of biometrics acquisition equipments -- and -- or the user-identification information which it keyed is used.

[0010] Moreover, a user terminal is connected to a network with an authentication server, respectively, and the remote authentication system concerning the next invention is set to the remote authentication system which attests the user who accesses the above-mentioned user terminal. At least 1 or two or more kinds of biometrics acquisition equipments are connected to the above-mentioned user terminal. Or 1 or two or more authentication information acquisition software according to the above-mentioned user are stored. the above-mentioned authentication server -- the above-mentioned user terminal -- and -- Or it responds to actuation of the predetermined authentication information acquisition software according to the above-mentioned user. the above-mentioned user terminal downloaded from the above-mentioned authentication server on the occasion of authentication -- and -- the biometrics information acquired with the above 1 or two or more kinds of biometrics acquisition equipments -- and -- or the user-identification information which it keyed is used.

[0011] The remote authentication system which furthermore starts the next invention is equipped with the authentication information acquisition software which has the procedure in which the above-mentioned user chooses whether it uses any they are among two or more above-mentioned biometrics acquisition equipments connected to the above-mentioned user terminal, and inputs as the above-mentioned biometrics information.

[0012]

[Embodiment of the Invention] With reference to a drawing, the gestalt of implementation of this invention is explained in full detail below.

[0013] The configuration of the gestalt 1 of operation at the time of applying this invention to the Web system 1 at gestalt 1. drawing 1 of operation is shown. The authentication server terminal 3, the authentication client terminal 4 (this example Web server terminal), and user-terminal 5 grade are connected on a network 2. When Web server 4 is accessed through a user terminal 5 from a user by such Web system 1, the user's personal authentication is received from the authentication server terminal 3, and its service is given to a user by the result.

[0014] The authentication server terminals 3 are computer apparatus (what has CPU, memory, a disk, the communications control section, etc. as a configuration is shown hereafter) which store authentication control-section 3A, authentication information database 3B, and authentication information acquisition software pool (software is hereafter described to be S/W) 3C, such as a personal computer and a workstation. Moreover, the Web server terminals 4 are computer apparatus with which Web server database 4A, and authentication request section 4B and Web server S/W4C to be attested [of a user] operate, such as a personal computer and a workstation.

[0015] User-terminal equipment 5 is browser 5A which displays the information on the Web server terminal 4, and computer apparatus with which authentication information acquisition S/W5B operates, such as a personal computer and a workstation. Moreover, biometrics acquisition equipment 6 is connected to user-terminal equipment 5. Biometrics acquisition equipment 6 shows the retina information acquisition equipment 10 grade which acquires the retina information on the body as biometrics information with the fingerprint acquisition equipment 7 which acquires the fingerprint and palm-print information on the body as biometrics

information by an image processing etc., palm-print acquisition equipment 8, the character recognition tablet 9 which acquires the hand information which the user drew as biometrics information, an eyegrounds scan, etc.

[0016] The flow of the authentication processing in such a Web system 1 is shown in drawing 2. Browser 5A which is operating with user-terminal equipment 5 first and which is application explains the case (SP1) where the information on high Web server database 4A of whenever [secrecy / of the Web server terminal 4 / in which a user is the client of authentication] is accessed. Web server S/W4C which is performing the access control of the high information on whenever [secrecy] and which is application needs to perform user authentication, in order for whether this user has an access permission to judge (SP10).

[0017] That is, Web server S/W4C of the Web server terminal 4 notifies being attested [of a user] to authentication request section 4B with Client ID (identifier of the authentication request section), Application ID (identifier of Web server S/W4C which is the application which needs authentication), and access data classification (secret level of the data which the user has accessed) (SP11). Authentication request section 4B transmits an authentication demand of a user including the above-mentioned information to the authentication server terminal 3.

[0018] Authentication control-section 3A of the authentication server terminal 3 which received the authentication demand of a user chooses authentication information acquisition S/W11 from the authentication client ID, Application ID, and access data classification (SP20). The authentication information acquired, respectively was decided and authentication information acquisition S/W11 also has authentication information acquisition S/W11 which acquires two or more authentication information. Authentication control-section 3A transmits selected authentication information acquisition S/W11 to the Web server terminal 4 which is the client of authentication (SP21).

[0019] Authentication request section 4B of the Web server terminal 4 hands over authentication information acquisition S/W11 transmitted to Web server S/W4C, acquisition of authentication information is directed from a user, and authentication information acquisition S/W11 is transmitted to a user terminal 5 from Web server S/W4C by the directions (SP12).

[0020] As for browser 5A of a user terminal 5, transmitted authentication information acquisition S/W11 operates reception and this authentication information acquisition S/W11 as authentication information S/W5B (SP2). Authentication information S/W acquires the authentication information usually spontaneously used by the conventional computer systems, such as biometrics information, such as acquisition of user ID (an identifier, a firm, a personnel number, affiliation, an address, a telephone, etc. and ID currently assigned for every individual by the system), fingerprint information and palm-print information, hand information, and retina information, a password, and a one-time password. It may operate in harmony with other S/W, such as a driver which acquires authentication information at this time. Authentication information acquisition S/W5B transmits the user ID and authentication information which were acquired to the Web server terminal through browser 5A (SP3).

[0021] Authentication request section 4B of the Web server terminal 4 transmits the user ID and authentication information which were acquired from the user to the authentication server terminal 3 through Web server S/W4C (SP13). Using the user ID and authentication information which were transmitted, authentication control-section 3A of the authentication server terminal 3 carries out user authentication (SP22). Authentication information, such as biometrics information transmitted at this time, is collated with the individual humanity news accumulated in authentication information database 3B of the authentication server terminal 3 from the first.

When it is judged as a principal by collating of all the transmitted authentication information, this result is notified to the Web server terminal which is the client of authentication. Moreover, if a collating result is not right, it judges that he is not a principal and notifies at least one of this (SP23).

[0022] Authentication request section 4B of the Web server terminal 4 which is the client of carrier beam authentication about an authentication result notifies the authentication result to Web server S/W4C. Web server S/W4C judges the access permission or disapproval to high information of whenever [secrecy / of a Web server database] to this user by this authentication result (SP14). For example, actuation to user access, such as displaying this extra sensitive information, is performed.

[0023] in addition -- if it enciphers between between a user terminal 5 (authentication information acquisition S/W5B) and the Web server terminal 4, the Web server terminal 4, and the authentication server terminal 3 (authentication control-section 3A), while being able to keep authentication information secret -- ***** -- a better threat is reducible, moreover -- even if it enciphers between not between individual terminals but the user terminal 5 (authentication information acquisition S/W5B), and the authentication server terminal 3 (authentication control-section 3A) -- the same -- ***** -- a better threat is reducible.

[0024] example 1. -- selection processing of the simple example of a database structure and authentication information acquisition S/W5B is explained here using drawing 3 and drawing 4 . The item of user ID, user level, and authentication information is stored in authentication information database 3B of drawing 3 as information for every individual user. User ID is an identifier, a firm, a personnel number, affiliation, an address, a telephone, etc. and ID currently assigned for every individual by the system. Moreover, user level is an access level to extra sensitive information, and authentication information is biometrics information, such as fingerprint information as authentication information on a collating agency, hand information, and retina information, password information, the information on a one-time password, etc. further.

[0025] The authentication information acquisition S/W11 grade which acquires authentication information acquisition S/W11 which acquires both fingerprint information and retina information, authentication information acquisition S/W11 which acquires two fingerprint information, fingerprint information, and hand information is stored in authentication information acquisition S/W pool 3C of drawing 4 . Moreover, selectable authentication information acquisition S/W11 and data classification corresponding to secret level in authentication information acquisition S/W pool 3C are shown.

[0026] Let the case where the user has accessed information on Web server database 4C of data classification =17 first be an example as explanation of the optional feature of authentication information acquisition S/W11 of the authentication server terminal 3 in this example 1. It is referred to as authentication client ID=15 which are equivalent to the identifier of authentication request section 4B at this time, and is referred to as application ID=25 equivalent to the identifier of Web server S/W4C. Web server S/W4C notifies being attested [of a user] to data classification =17 at authentication request section 4B at the time of access generating. Authentication request section 4B transmits the above-mentioned information, data classification =17, authentication client ID=15, and an authentication demand of the user containing application ID=25 to the authentication server terminal 3. And the authentication server terminal 3 receives the authentication demand including such information.

[0027] Since the data with which authentication control-section 3A of the authentication server

terminal 3 was required as the database of authentication information acquisition S/W pool 3C of drawing 4 from the data classification of the received authentication demand are level 2 whenever [secret], they get to know the selectable candidate of with a level of two or more authentication information acquisition S/W11 like a graphic display.

[0028] Some another examples of an authentication information database are explained like drawing 3 using example 2., drawing 5 , and drawing 6 . Here, selectable authentication information acquisition S/W11 for every authentication client ID and every application ID is shown. Authentication control-section 3A of the authentication server terminal 3 gets to know the candidate of authentication information acquisition S/W11 which can choose from the authentication client ID and can be chosen from Application ID using such information. Therefore, A, B, C, D, E, and F become a candidate, C, D, and E become a candidate by the authentication client ID, with Application ID, A, D, E, and F become a candidate and one of D and the E is eventually chosen by data classification.

[0029] The authentication server terminal 3 from the candidate of this selectable authentication information acquisition S/W chooses selection or S/W regular fixed with means, such as selection or sequential selection, at random. According to environments, such as data classification which is access information, authentication request section 4B which is operating with the equipment which is the client of authentication, and Web server S/W4C which is the application used, an authentication means and authentication information can be flexibly chosen like this example, and the existence of specification of an individual and this individual's access privilege can be certainly judged according to an environment.

[0030] example 3. -- as a following example, user ID is contained in the authentication demand and the case where detail setting out is carried out as the authentication information database of drawing 3 shows drawing 7 is explained. The flow of this processing is shown in drawing 8 which gave the same sign to the corresponding point with drawing 2 . first, the Web server terminal 4 -- user ID (an identifier, a firm, and a personnel number --) ID currently assigned for every individual by affiliation, the address, the telephone, etc. and the system is acquired. The user ID, Client ID (identifier of authentication request section 4B) which were acquired This user's authentication is requested from authentication request section 4B with Application ID (identifier of Web server S/W4C which is the application which needs authentication), and access data classification (secret level of the data which the user has accessed).

[0031] When the authentication information database 3B of drawing 7 is attested with a user's classification (data administrator, general user, etc.), the authentication client ID which can be used, the application ID which can be used, and a principal, the selection situation of authentication information acquisition S/W to the past count of convention authentication and the information for every user individuals, such as a rate of collating, the total count of authentication, and a selection criterion, are added to the authentication information database of drawing 3 as the control information of the application handed over by application and a collating log.

[0032] When user ID is contained in the authentication demand, it chooses in accordance with the selection criterion of the applicable user of drawing 7 . It is user ID =1 as an example, and, as for others, in the case of data classification =17, authentication client ID=15, and application ID=25 as well as a front example, authentication request section 4B transmits an authentication demand of the user who contains user ID =1, data classification =17, authentication client ID=15, and application ID=25 as the above-mentioned information to the authentication server terminal 3.

[0033] And the authentication server terminal 3 receives the authentication demand including such information. A, B, C, D, E, and F become a candidate by data classification like ****, C, D, and E become a candidate by the authentication client ID, by Application ID, A, D, E, and F become a candidate and one of D and the E is chosen eventually. Moreover, user ID = since it is 1, authentication control-section 3A chooses by the total count of authentication. the 1st time of the total count of authentication -- D and the 2nd time -- E3 time -- D and 4timeE as -- it chooses. here -- user ID = -- the total -- by count = of authentication 20, since it is the 21st time this time, D of authentication information acquisition S/W11 is chosen.

[0034] If the authentication client ID which can be used for authentication information database 3B for every user, and the application ID which can be used have assignment as shown in other examples . and drawing 7 , only while using the authentication client and application which were specified, the access control of sending authentication information acquisition S/W11 to this user can be realized. Here, since 15 is in the client ID which can be used and 25 is in the application ID which can be used, sending of authentication information acquisition S/W11 is permitted.

[0035] Moreover, the propriety of sending of authentication information acquisition S/W11 can be judged also by user classification shown in drawing 7 . If secret level is furthermore similarly assigned to an authentication client and application with a user, the authentication server terminal 3 can choose authentication information acquisition S/W11 from the level of an authentication client, the level of application, and the level of access data classification at the time of selection of authentication information acquisition S/W11. That is, control which is chosen from authentication information acquisition S/W11 more than the highest level in three, for example can be performed.

[0036] Although it is the same as that of **** after sending of authentication information acquisition S/W11, since user ID is already acquired, the places to which only authentication information is transmitted differ. Moreover, when attested with the principal of drawing 7 , the Web server terminal 4 can also realize a variegated access control using Key-1 which is the control information of the application handed over by application.

[0037] Furthermore, when a selection criterion replaces with this although the selection criterion was the total count of authentication in **** as an example of the rate of collating of drawing 7 , and a selection criterion considers as collating assessment, in with a level of two or more authentication information acquisition S/W11, the highest thing of the past collating assessment is looked for from this user's collating log, and it is chosen. Here, since collating assessment of the last E is the highest, E is chosen.

[0038] Moreover, there is also an example which omits the authentication acquisition S/W transfer to an authentication client from the authentication server terminal 3. When authentication information acquisition S/W is decided by the case of the Web system 1 mentioned above fixed, the Web server terminal 4 of an authentication client acquires authentication information acquisition S/W11 beforehand, and you may make it transmit the authentication information acquisition S/W11 without a transfer of authentication information acquisition S/W to the Web server terminal 4 of an authentication client from the authentication server terminal 3 in it at a user terminal 5 with the Web server terminal 4 which is an authentication client.

[0039] As mentioned above, it sets to this Web system 1. The user who has accessed when attesting using biometrics information, The data classification which is access information, and authentication request section 4B which is operating at the Web server terminal 4 which is the client of authentication, The existence of specification of an individual and this individual's

access privilege can be certainly judged according to the environment by choosing authentication information acquisition S/W11 which acquires information dynamically required for authentication according to environments and authentication hysteresis (at the time of authentication condition), such as Web server S/W4C which is the application used.

[0040] gestalt 2. of operation -- the gestalt 1 of operation is simplified in the gestalt 2 of this operation. Drawing 9 which gave the same sign to the corresponding point with drawing 1 has the user terminal which acquires biometrics information, and the same terminal of an authentication client. They are computer apparatus with which local database 5C which there is database retrieval application 5E which performs database retrieval as an example of application to be attested, and database retrieval application 5E uses, authentication request section 5D, and database retrieval application 5E to be attested [of a user] and authentication information acquisition S/W11 operate, such as a personal computer and a workstation. It connects with the user terminal 5, and it is the completely same configuration as the gestalt 1 of operation mentioned above, and biometrics acquisition equipment 6 is the completely same configuration as the gestalt 1 of the operation which also mentioned the authentication server terminal 3 above. [0041] In drawing 10 which is fundamentally the same as the gestalt 1 of above-mentioned operation, and gave the same sign to the corresponding point with drawing 2 and drawing 8 database retrieval application 5E In case it accesses to the extra sensitive information of local database 5C, (SP5), User ID (an identifier, a firm, a personnel number, affiliation, an address, a telephone, etc. and ID currently assigned for every individual by the system) is acquired first (SP6). The user ID, Client ID (identifier of authentication request section 5D) which were acquired This user's authentication is requested from authentication request section 5D with Application ID (identifier of database retrieval application 5E which is the application which needs authentication), and access data classification (secret level of the data which the user has accessed) (SP7).

[0042] Actuation of the authentication server terminal 3 is the same as the gestalt 1 of operation, authentication processing is performed, and authentication request section 5D of the user terminal 5 which is the client of carrier beam authentication about an authentication result notifies the authentication result to database retrieval application 5E. Database retrieval application 5E judges whether access to the high information on whenever [secrecy / of local database 5C] is permitted to this user by this authentication result (SP8). For example, actuation to user access, such as displaying this extra sensitive information, is performed. According to such a configuration, a user terminal 5 can acquire the same effectiveness as the gestalt 1 of operation mentioned above in the configuration which advances an authentication request.

[0043] gestalt 3. of operation -- with the gestalt 3 of this operation, in drawing 2 and drawing 11 which gave the same sign to the corresponding point with drawing 8 , when the personal authentication information specified by authentication information acquisition S/W11 transmitted from the authentication server 3 does not suit a user's intention, the procedure (SP2B, SP12A) in which a user refuses applicable authentication information acquisition S/W is shown. The authentication server terminal 3 with which acquisition was refused reselects other authentication information acquisition S/W (SP20A). However, it is the case where there is other authentication information acquisition S/W which can reselect as mentioned above about drawing 4 .

[0044] When accompanied by a thing and dysphoria with the specified biometrics acquisition equipment 6 dirty when using biometrics as individual authentication information, a user does refusal. Although biometrics is effective in identifying an individual, the problem of privacy

protection and the opportunity for a user to also refuse or change a sanitary problem for a certain reason are indispensable as mentioned above.

[0045] Moreover, also when biometrics acquisition equipment 6 cannot trust it in security, even if there is the intention to say that he wants to specify alternative means, such as a one-time password (OTP), even if complicated [other than biometrics information] and it follows the intention of refusal of a user or modification, the effectiveness that the existence of specification of an individual and this individual's access privilege can be certainly judged according to the environment can acquire by choosing authentication information acquisition S/W which acquires information dynamically required for authentication.

[0046] As a means to acquire the same effectiveness as the gestalt 3 of gestalt 4, implementation of operation, the optional feature of acquisition authentication information is included in authentication information acquisition S/W of the gestalten 1 and 2 of operation itself. In the example of the gestalt 1 of operation, what carries out authentication implementation for the fingerprint and hand information on D, and the thing to attest only with the fingerprint of E can be chosen as authentication information acquisition S/W which can be chosen. At this time, the places to which authentication information acquisition S/W which an authentication server combines with the authentication information acquisition function of D and E both is transmitted differ.

[0047] The configuration and operations sequence of Web system 1 the very thing are the same as that of the gestalten 1 and 2 of operation. The screen image of authentication information acquisition S/W by the side of a user is shown in drawing 12 . A user chooses either from D/E and acquires his own [an authentication means and] authentication information. If it chooses any of the selection carbon buttons 12A and 12B of a screen they are, authentication information acquisition S/W will operate, and authentication information chosen actually is acquired. At the authentication server terminal 3, with the classification of the sent authentication information, it can judge whether it can attest in the group of the sent information, and the same effectiveness as the gestalt 3 of operation can be acquired.

[0048] Although the authentication information acquired by authentication information acquisition S/W was determined with the gestalten 1-4 of the gestalt 5, above-mentioned operation of operation, it is good even if like [which the authentication information acquired not on authentication information acquisition S/W but on a screen is shown]. For example, at the time of the count of authentication of the detail database of the gestalt 1 of operation, it is displayed that fingerprint information and hand information are sent to a screen. Thereby, a user operates the software which acquires authentication information spontaneously according to the displayed content, and sends the acquired authentication information to the authentication server terminal 3.

[0049] Moreover, you may make it display that the authentication information which was not shown concretely but was beforehand decided by the display is sent. In this case, the software with which a user acquires authentication information for all the authentication information beforehand notified in advance by storage of a user from the manager etc. to the user separately spontaneously is operated, and the acquired authentication information is sent to an authentication server. If it does in this way, the same effectiveness as the gestalt 1 of above-mentioned operation is realizable, but in a display, since a means to acquire serves as treatment like a password when sending the authentication information which was not shown concretely but was decided beforehand, security can be improved much more.

[0050] In addition, in the gestalten 1-4 of above-mentioned operation, in the Web server terminal

4, although the case where a user's personal authentication was performed was described, it is widely applicable [this invention] to the general control unit which needs a user's personal authentication like the close leaving terminal unit connected not only to this but to the network.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of the gestalt 1 of operation [the remote authentication system by this invention] of ***** of a Web system.

[Drawing 2] It is the timing chart with which explanation of the authentication processing in the Web system of drawing 1 is presented.

[Drawing 3] It is the graph with which explanation of the example 1 of the authentication information database in the authentication server terminal of drawing 1 is presented.

[Drawing 4] It is the graph with which explanation of the example 1 of the authentication information database in the authentication server terminal of drawing 1 is presented.

[Drawing 5] It is the graph with which explanation of the example 2 of the authentication information database in the authentication server terminal of drawing 1 is presented.

[Drawing 6] It is the graph with which explanation of the example 2 of the authentication information database in the authentication server terminal of drawing 1 is presented.

[Drawing 7] It is the graph with which explanation of the example 3 of the authentication information database in the authentication server terminal of drawing 1 is presented.

[Drawing 8] It is the timing chart with which explanation of authentication processing of the example 3 in the Web system of drawing 1 is presented.

[Drawing 9] It is the block diagram showing the configuration of the gestalt 2 of operation [the remote authentication system by this invention] of ***** of a Web system.

[Drawing 10] It is the timing chart with which explanation of the authentication processing in the Web system of drawing 9 is presented.

[Drawing 11] It is the timing chart with which explanation when refusal occurs as a gestalt 3 of implementation of the authentication processing in the Web system of drawing 1 is presented.

[Drawing 12] It is approximate line drawing with which explanation of the display screen of authentication information acquisition S/W is presented as a gestalt 4 of operation of the Web system of drawing 1 .

[Description of Notations]

1 Web System

2 Network

3 Authentication Server Terminal

3A Authentication control section

3B Authentication information database

3C Authentication information acquisition software pool

4 Web Server Terminal

4A Web server database

4B Authentication request section

4C Web server software

5 User Terminal

5A Browser

5B Authentication information acquisition software actuation

- 6 Biometrics Acquisition Equipment
 - 7 Fingerprint Acquisition Equipment
 - 8 Palm-Print Acquisition Equipment
 - 9 Character Recognition Tablet
 - 10 Retina Information Acquisition Equipment
 - 11 Authentication Information Acquisition Software
-

[Translation done.]

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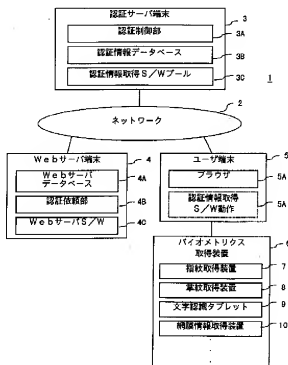
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(54)【発明の名称】 遠隔認証システム

(57)【要約】

【課題】 遠隔認証システムにおいて、バイオメトリクス情報によりユーザの認証を行う際、確実にユーザの特定とアクセスの有無を判定し得ると共に使い勝手を格段的に向上する。

【解決手段】 ユーザ端末には少なくとも1又は複数種類のバイオメトリクス取得装置が接続され、認証サーバにはユーザ端末及び又はユーザに応じた1又は複数の認証情報取得ソフトウェアが格納され、認証に際して認証サーバからダウンロードされるユーザ端末及び又はユーザに応じた所定の認証情報取得ソフトウェアの動作に応じて、1又は複数種類のバイオメトリクス取得装置で取得されたバイオメトリクス情報及び又はキー入力されたユーザ識別情報を用いるようにした。



【特許請求の範囲】

【請求項1】 ネットワークに認証サーバと、認証クライアントと、ユーザ端末がそれぞれ接続され、上記ユーザ端末を通じて上記認証クライアントにアクセスするユーザの認証を行う遠隔認証システムにおいて、上記ユーザ端末には少なくとも1又は複数種類のバイオメトリクス取得装置が接続され、上記認証サーバには上記ユーザ端末及び又は上記ユーザに応じた1又は複数の認証情報取得ソフトウェアが格納され、認証に際して上記認証サーバからダウンロードされる上記ユーザ端末及び又は上記ユーザに応じた所定の認証情報取得ソフトウェアの動作に応じて、上記1又は複数種類のバイオメトリクス取得装置で取得されたバイオメトリクス情報及び又はキー入力されたユーザ識別情報を用いるようにしたことを特徴とする遠隔認証システム。

【請求項2】 ネットワークに認証サーバと、ユーザ端末がそれぞれ接続され、上記ユーザ端末にアクセスするユーザの認証を行う遠隔認証システムにおいて、上記ユーザ端末には少なくとも1又は複数種類のバイオメトリクス取得装置が接続され、上記認証サーバには上記ユーザ端末及び又は上記ユーザに応じた1又は複数の認証情報取得ソフトウェアが格納され、認証に際して上記認証サーバからダウンロードされる上記ユーザ端末及び又は上記ユーザに応じた所定の認証情報取得ソフトウェアの動作に応じて、上記1又は複数種類のバイオメトリクス取得装置で取得されたバイオメトリクス情報及び又はキー入力されたユーザ識別情報を用いるようにしたことを特徴とする遠隔認証システム。

【請求項3】 上記ユーザ端末に接続された上記複数のバイオメトリクス取得装置のうち、何れかを用いて上記バイオメトリクス情報として入力するかを上記ユーザが選択する手順を有する認証情報取得ソフトウェアを備えることを特徴とする請求項1又は請求項2に記載の遠隔認証システム。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 この発明は、遠隔認証システムにおいて、バイオメトリクスにより個人の特定とその個人の情報やアプリケーションへのアクセス権の有無の判定を1つの認証サーバ端末にて集中的に行うシステムに関するものである。

【0002】

【従来の技術】 従来、ネットワークに接続された情報処理システムにおいて機密保持のため、個人を特定し該個人のアクセス許可と不許可の判断を行う、すなわち認証が必要である。また、銀行の現金自動支払機等では個人の特定と預金残高等該個人の取り引き情報にアクセスするための認証や、機密度の高い研究場所や会員制クラブ等への入退室時にも個人の認証が実施されている。

【0003】 これらの認証として、身分証明書等と同様

の位置づけである磁気カードやICカード、パスワード等の個人の記憶や、これらの組み合わせによって個人の特定と資格の認定、すなわち認証を実施している。ところがパスワード等は忘却の恐れがあり、磁気カードやICカード等は紛失や破損等により認証が不能に陥ったり、盗難やパスワード情報の漏洩により本人以外が本人と成りすまして認証されてしまう等の問題がある。またこれらによって機密度を高く保つためには、確実に本人と認証する必要があるが、パスワード等を複雑にしたリ、ワンタイムパスワード（OTP）等の手段を用いると、その分記憶し難くなったり、認証操作自体が煩雑になる。さらに磁気カード等を使用しない、記憶による認証を広域で実施（銀行の複数の店舗で使用）する場合には、認証情報は集中的に管理する必要がある。

【0004】

【発明が解決しようとする課題】 一方、指紋情報、掌紋情報、筆跡情報、網膜情報等の個人の生体的特徴であるバイオメトリクス情報による認証では、煩雑さを解消すると共に成りすまして困難である。バイオメトリクス情報による認証が広域で必要な場合には、上述と同様の理由及びプライバシー保護の面からも、集中的な管理と認証が必要である。このバイオメトリクス情報による認証を集中的に実施する場合、ユーザ毎だけではなく、認証を必要とするものや場所、システム等のセキュリティレベル（機密レベル）により適切な認証方法を選択して、認証情報を取得することが重要である。

【0005】 ここでIETF（Internet Engineering Task Force）のRFC（Request For Comment）に登録されているRFC2138（Remote Authentication Dial In User Service、以下RADIUS、前RFC2058が更新）で記述されているRADIUSサーバは、RADIUSクライアントの認証要求を受け集中的に認証処理を行い認証結果を返送するが、認証手段や認証情報はユーザ毎に固定的に予め決められており、バイオメトリクス情報を取得する場合にはその取得環境に応じて動的に認証手段と認証情報を変更できないという問題があった。

【0006】 このような従来例として、さらに特開平9-81518号公報に示される「ネットワーク上の認証方法」のように、ユーザホストがアプリケーションサーバにアクセスしてした場合に、アプリケーションサーバが認証サーバに固定的な認証手段と認証情報を使用してユーザの認証を依頼し、認証結果を受けるような認証方法がある。

【0007】 またバイオメトリクス情報は個人を識別するのに有効であるが、プライバシー保護の問題と、バイオメトリクス取得装置自体が不潔なものや不快を伴う場合のように衛生的に取得上の問題もある。

【0008】 この発明は以上の問題点を解消するための、バイオメトリクス情報により個人の認証を行う際、確実に個人の特定と該個人のアクセス件の有

無を判定し得ると共に使い勝手を格段的に向上し得る遠隔認証システム及び遠隔認証方法を得ることを目的とする。

【0009】

【課題を解決するための手段】この発明に係る遠隔認証システムは、ネットワークに認証サーバと、認証クライアントと、ユーザ端末がそれぞれ接続され、上記ユーザ端末を通じて上記認証クライアントにアクセスするユーザの認証を行う遠隔認証システムにおいて、上記ユーザ端末には少なくとも1又は複数種類のバイオメトリクス取得装置が接続され、上記認証サーバには上記ユーザ端末及び又は上記ユーザに応じた1又は複数の認証情報取得ソフトウェアが格納され、認証に際して上記認証サーバからダウンロードされる上記ユーザ端末及び又は上記ユーザに応じた所定の認証情報取得ソフトウェアの動作に応じて、上記1又は複数種類のバイオメトリクス取得装置で取得されたバイオメトリクス情報及び又はキー入力されたユーザ識別情報を用いるようにしたものである。

【0010】また次の発明に係る遠隔認証システムは、ネットワークに認証サーバと、ユーザ端末がそれぞれ接続され、上記ユーザ端末にアクセスするユーザの認証を行う遠隔認証システムにおいて、上記ユーザ端末には少なくとも1又は複数種類のバイオメトリクス取得装置が接続され、上記認証サーバには上記ユーザ端末及び又は上記ユーザに応じた1又は複数の認証情報取得ソフトウェアが格納され、認証に際して上記認証サーバからダウンロードされる上記ユーザ端末及び又は上記ユーザに応じた所定の認証情報取得ソフトウェアの動作に応じて、上記1又は複数種類のバイオメトリクス取得装置で取得されたバイオメトリクス情報及び又はキー入力されたユーザ識別情報を用いるようにしたものである。

【0011】さらに次の発明に係る遠隔認証システムは、上記ユーザ端末に接続された上記複数のバイオメトリクス取得装置のうち、何れかを用いて上記バイオメトリクス情報として入力するかを上記ユーザが選択する手順を有する認証情報取得ソフトウェアを備えるものである。

【0012】

【発明の実施の形態】以下図面を参照して、この発明の実施の形態について詳述する。

【0013】実施の形態1. 図1にこの発明をWebシステム1に適用した場合の実施の形態1の構成を示す。ネットワーク2上に認証サーバ端末3、認証クライアント端末4（本例ではWebサーバ端末）、ユーザ端末5等が接続される。このようなWebシステム1でWebサーバ4はユーザからユーザ端末5を通じてアクセスされた時に、そのユーザの個人認証を認証サーバ端末3から受け、その結果によりユーザに対してサービスを行う。

【0014】認証サーバ端末3は、認証制御部3Aと、認証情報データベース3Bと、認証情報取得ソフトウェア（以下、ソフトウェアは、S/Wと記述する）3Cとを格納するパーソナルコンピュータやワークステーション等のコンピュータ装置（以下、構成としてCPU、メモリ、ディスク、通信制御部等を有するものを示す）である。またWebサーバ端末4は、Webサーバデータベース4Aと、認証依頼部4B及びユーザの認証に必要なWebサーバS/W4Cが動作するパーソナルコンピュータやワークステーション等のコンピュータ装置である。

【0015】ユーザ端末装置5は、Webサーバ端末4の情報を表示するブラウザ5Aと、認証情報取得S/W5Bが動作するパーソナルコンピュータやワークステーション等のコンピュータ装置である。またユーザ端末装置5にはバイオメトリクス取得装置6が接続されている。バイオメトリクス取得装置6は、画像処理等により人体の指紋や掌紋情報をバイオメトリクス情報として取得する指紋取得装置7や掌紋取得装置8、ユーザが描いた筆跡情報をバイオメトリクス情報として取得する文字認識タブレット9、眼底スキャン等によって人体の網膜情報をバイオメトリクス情報として取得する網膜情報取得装置10等を示している。

【0016】このようなWebシステム1における認証処理の流れを図2に示す。まずユーザ端末装置5で動作しているアプリケーションであるブラウザ5Aにより、ユーザが認証のクライアントであるWebサーバ端末4の機密度の高いWebサーバデータベース4Aの情報にアクセスした場合（SP1）について説明する。その機密度の高い情報のアクセス制御を行っているアプリケーションであるWebサーバS/W4Cは、該ユーザがアクセス権限を有するか否かの判定するためにユーザ認証を行う必要がある（SP10）。

【0017】すなわちWebサーバ端末4のWebサーバS/W4Cは、クライアントID（認証依頼部の識別子）、アプリケーションID（認証を必要とするアプリケーションであるWebサーバS/W4Cの識別子）、アクセスデータ種別（ユーザがアクセスしてきたデータの機密レベル）と共に認証依頼部4Bにユーザの認証が必要であることを通知する（SP11）。認証依頼部4Bは認証サーバ端末3へ上記情報を含むユーザの認証要求を送信する。

【0018】ユーザの認証要求を受信した認証サーバ端末3の認証制御部3Aは認証クライアントID、アプリケーションID、アクセスデータ種別から、認証情報取得S/W11を選択する（SP20）。認証情報取得S/W11はそれぞれ取得する認証情報が決まっており、複数の認証情報取得する認証情報取得S/W11もある。認証制御部3Aは選択した認証情報取得S/W11を認証のクライアントであるWebサーバ端末4へ転送

する（SP21）。

【0019】Webサーバ端末4の認証依頼部4Bは、WebサーバS/W4Cに転送された認証情報取得S/W11を引き渡し、ユーザから認証情報の取得を指示し、その指示によりWebサーバS/W4Cからユーザ端末5に認証情報取得S/W11が転送される（SP12）。

【0020】ユーザ端末5のブラウザ5Aは転送された認証情報取得S/W11を受け取り、この認証情報取得S/W11を認証情報S/W5Bとして動作させる（SP2）。認証情報S/Wは、自発的にユーザID（名前、会社、社員番号、所属、住所、電話番号や、システムで個人毎に割り振られているID）の取得と、指紋情報、掌紋情報、筆跡情報、網膜情報等のバイオメトリクス情報や、パスワードやワンタイムパスワード等の従来のコンピュータシステムで通常使用される認証情報を取得する。このとき認証情報取得するドライブ等の他のS/Wと協調して動作する場合もある。認証情報取得S/W5Bは、ブラウザ5Aを介してWebサーバ端末へ取得したユーザIDと認証情報を転送する（SP3）。

【0021】Webサーバ端末4の認証依頼部4BはWebサーバS/W4Cを介して、ユーザから取得したユーザIDと認証情報を認証サーバ端末3へ転送する（SP13）。認証サーバ端末3の認証制御部3Aは転送されたユーザIDと認証情報により、ユーザ認証を実施する（SP2）。このとき転送されたバイオメトリクス情報等の認証情報は、認証サーバ端末3の認証情報データベース3Bに元々蓄積されている個人情報と照合する。転送された全ての認証情報の照合で本人と判断した場合には、この結果を認証のクライアントであるWebサーバ端末4に通知する。また、照合結果が1つでも正しくなければ本人ではないと判断しこれを通知する（SP23）。

【0022】認証結果を受けた認証のクライアントであるWebサーバ端末4の認証依頼部4Bは、その認証結果をWebサーバS/W4Cに通知する。WebサーバS/W4Cは該認証結果により該ユーザに対してWebサーバデータベースの機密度の高い情報へのアクセス許可又は不許可を判定する（SP14）。例えば、該機密情報の表示を行う等、ユーザアクセスに対する動作を行う。

【0023】なおユーザ端末5（認証情報取得S/W5B）とWebサーバ端末4間と、Webサーバ端末4と認証サーバ端末3間（認証制御部3A）は暗号化すれば認証情報の秘匿を行えたと共に、成りすましの脅威を減らすことができる。また個別端末間ではなく、ユーザ端末5（認証情報取得S/W5B）と認証サーバ端末3間（認証制御部3A）で暗号化を実施しても同様に成りすましの脅威を減らすことができる。

【0024】実施例1。ここで図3、図4を用いて、データベース構造の単純な例と認証情報取得S/W5Bの選択処理について説明する。図3の認証情報データベース3Bには個人ユーザ毎の情報として、ユーザID、ユーザレベル、認証情報の項目が格納されている。ユーザIDは、名前、会社、社員番号、所属、住所、電話番号や、システムで個人毎に割り振られているIDである。またユーザレベルは機密情報へのアクセスレベルであり、さらに認証情報は照合元の認証情報としての指紋情報、筆跡情報、網膜情報等のバイオメトリクス情報、パスワード情報やワンタイムパスワードの情報等である。

【0025】図4の認証情報取得S/Wプールの3Cには、指紋情報と網膜情報の両方を取得する認証情報取得S/W11や、2本の指紋情報を取得する認証情報取得S/W11、指紋情報と筆跡情報を取得する認証情報取得S/W11等が格納されている。また、認証情報取得S/Wプール3Cは、機密レベルに対応した選択可能な認証情報取得S/W11とデータ種別が示されている。

【0026】この実施例1での認証サーバ端末3の認証情報取得S/W11の選択機構の説明として、まずデータ種別=17のWebサーバデータベース4Cの情報にユーザがアクセスしてきた場合を例とする。このとき認証依頼部4Bの識別子に相当する認証クライアントID=15とし、WebサーバS/W4Cの識別子に相当するアプリケーションID=25とする。WebサーバS/W4Cはデータ種別=17にアクセス発生時、認証依頼部4Bにユーザの認証が必要であることを通知する。認証依頼部4Bは認証サーバ端末3へ上記情報、データ種別=17、認証クライアントID=15、アプリケーションID=25を含むユーザの認証要求を送信する。そしてこれらの情報を含んだ認証要求を認証サーバ端末3が受信する。

【0027】認証サーバ端末3の認証制御部3Aは、図4の認証情報取得S/Wプール3Cのデータベースと受信した認証要求のデータ種別から要求されたデータは機密密度レベル2であるため、図示のようレベル2以上の認証情報取得S/W11の選択可能候補を知る。

【0028】実施例2。また図5及び図6を用いて、図3と同様に認証情報データベースの一部の別の実施例を説明する。ここには、認証クライアントID毎やアプリケーションID毎の選択可能な認証情報取得S/W11が示されている。認証サーバ端末3の認証制御部3Aは、これらの情報により、認証クライアントIDから選択できるアプリケーションIDから選択できる認証情報取得S/W11の候補を知る。従って、データ種別によって、A、B、C、D、E、Fが候補になり、認証クライアントIDによって、C、D、Eが候補になり、アプリケーションIDによって、A、D、E、Fが候補になり、最終的にD、Eのどちらかが選択される。

【0029】この選択可能認証情報取得S/Wの候補か

らの認証サーバ端末3がランダムに選択、または固定的に決まったS/Wを選択、または順次選択といった手段で選択する。この例では、アクセス情報であるデータ種別や、認証のクライアントである装置で動作している認証依頼部4Bや、使用アプリケーションであるWebサーバS/W4C等の環境に応じて認証手段と認証情報をフレキシブルに選択でき、個人の特定と該個人のアクセス権の有無を環境に応じて確実に判定できる。

【0030】実施例3. 次の実施例として、ユーザIDが認証要求に含まれており、図3の認証情報データベースが図7に示すように詳細設定されている場合を説明する。この処理の流れを図2との対応部分に同一符号を付した図8に示す。まず、Webサーバ端末4は、ユーザID（名前、会社、社員番号、所属、住所、電話等やシステムで個人毎に割り振られているID）を取得し、取得したユーザID、クライアントID（認証依頼部4Bの識別子）、アプリケーションID（認証を必要とするアプリケーションであるWebサーバS/W4Cの識別子）、アクセスデータ種別（ユーザがアクセスしてきたデータの機密レベル）とともに認証依頼部4Bに該ユーザの認証を依頼する。

【0031】図7の認証情報データベース3Bは、ユーザの種別（データ管理者か一般ユーザか等）、使用できる認証クライアントID、使用できるアプリケーションID、本人と認証された場合にアプリケーションに引き渡されるアプリケーションの制御情報、照合ログとして過去の規定認証回数までの認証情報取得S/Wの選択状況と照合率、総認証回数、選択基準等、ユーザ個人毎の情報が図3の認証情報データベースに追加されている。

【0032】ユーザIDが認証要求に含まれている場合には、図7の該当ユーザの選択基準に従って選択する。具体例としてユーザID=1であり、他は前の例と同様にデータ種別=17、認証クライアントID=15、アプリケーションID=25の場合、認証依頼部4Bは認証サーバ端末3へ、上記情報としてユーザID=1、データ種別=17、認証クライアントID=15、アプリケーションID=25を含むユーザの認証要求を送信する。

【0033】そしてこれらの情報を含んだ認証要求を認証サーバ端末3が受信する。上述と同様にデータ種別によってA、B、C、D、E、Fが候補になり、認証クライアントIDによってC、D、Eが候補になり、アプリケーションIDによってA、D、E、Fが候補になり、最終的にD、Eのどちらかが選択される。また、ユーザID=1であることから、認証制御部3Aは総認証回数によって選択を実施する。総認証回数の1回目はD、2回目はE 3回目はD、4回目E……というように選択する。ここではユーザID=1の総認証回数=20で、今回は21回目であるため認証情報取得S/W11のDが選択される。

【0034】他の実施例。また、図7に示すように認証

情報データベース3Bにユーザ毎に使用できる認証クライアントID、使用できるアプリケーションIDに指定があれば、指定された認証クライアントやアプリケーションを使用しているときのみ該ユーザに対して認証情報取得S/W11を送付する等のアクセス制御が実現できる。ここでは、使用できるクライアントIDに15があり、使用できるアプリケーションIDにも25があるため、認証情報取得S/W11の送付が許可される。

【0035】また、図7に示すユーザ種別によっても認証情報取得S/W11の送付の可否を判定できる。さらに認証クライアントやアプリケーションにユーザと同様に機密レベルを割り振れば、認証情報取得S/W11の選択時に、認証サーバ端末3は認証クライアントのレベルとアプリケーションのレベルとアクセスデータ種別のレベルから認証情報取得S/W11を選択できる。すなわち、例えば3つの中の最も高いレベル以上の認証情報取得S/W11から選択するような制御ができる。

【0036】認証情報取得S/W11の送付以降は、上述と同様であるが、ユーザIDはすでに取得しているため、認証情報のみが転送されることが異なる。また、図7の本人と認証された場合にアプリケーションに引き渡されるアプリケーションの制御情報である、Key1をWebサーバ端末4が使用して多彩なアクセス制御を実現することもできる。

【0037】さらに、選択基準が図7の照合率の例として、上述では選択基準が総認証回数であったが、これに代え、選択基準が照合評価とした場合には、レベル2以上の認証情報取得S/W11の中で、過去の照合評価の最も高いものを該ユーザの照合ログから探し、それを選択する。ここでは前回のEの照合評価が最も高いのでEが選択される。

【0038】また、認証サーバ端末3から認証クライアントへの認証取得S/W転送を省略する例もある。上述したWebシステム1のケースでは認証クライアントであるWebサーバ端末4によって、認証情報取得S/Wが固定的に決まってしまう場合には、認証クライアントのWebサーバ端末4が認証情報取得S/W11を予め取得しておき、その認証情報取得S/W11を認証サーバ端末3から認証クライアントのWebサーバ端末4へ、認証情報取得S/Wの転送なしにユーザ端末5に転送するようにしても良い。

【0039】以上のように、このWebシステム1においては、バイオメトリクス情報により認証を行う場合に、アクセスしてきたユーザや、アクセス情報であるデータ種別や、認証のクライアントであるWebサーバ端末4で動作している認証依頼部4Bや、使用アプリケーションであるWebサーバS/W4C等の環境や認証履歴（認証時状態）に応じて、動的に認証に必要な情報を取得する認証情報取得S/W11を選択することにより、個人の特定と該個人のアクセス権の有無をその環境

に応じて確実に判定できる。

【0040】実施の形態2。この実施の形態2においては実施の形態1を簡略化したものである。図1との対応部分に同一符号を付した図9は、バイオメトリクス情報を取得するユーザ端末と認証クライアントの端末が同一である。認証が必要なアプリケーションの例としてデータベース検索を行うデータベース検索アプリケーション5Eがあり、データベース検索アプリケーション5Eが使用するローカルデータベース5C、認証依頼部5D、ユーザの認証が必要なデータベース検索アプリケーション5Eと認証情報取得S/W11が動作するパーソナルコンピュータ、ワークステーション等のコンピュータ装置である。バイオメトリクス取得装置6はユーザ端末5に接続されており、上述した実施の形態1と全く同様の構成であり、また認証サーバ端末3も、上述した実施の形態1と全く同様の構成である。

【0041】基本的に上述の実施の形態1と同じであり、図2、図8との対応部分に同一符号を付した図10において、データベース検索アプリケーション5Eは、ローカルデータベース5Cの機密情報へアクセスする際に（SP5）、まずユーザID（名前、会社、社員番号、所属、住所、電話等や、システムで個人毎に割り振られているID）を取得し（SP6）、取得したユーザID、クライアントID（認証依頼部5Dの識別子）、アプリケーションID（認証を必要とするアプリケーションであるデータベース検索アプリケーション5Eの識別子）、アクセスデータ種別（ユーザがアクセスしてきたデータの機密レベル）と共に、認証依頼部5Dに該ユーザの認証を依頼する（SP7）。

【0042】認証サーバ端末3の動作は実施の形態1と同じであり、認証処理を実行し認証結果を受けた認証のクライアントであるユーザ端末5の認証依頼部5Dは、その認証結果をデータベース検索アプリケーション5Eに通知する。データベース検索アプリケーション5Eは該認証結果により、該ユーザに対してローカルデータベース5Cの機密度の高い情報のアクセスを許可するか否かを判定する（SP8）。例えば該機密情報の表示を行う等、ユーザアクセスに対する動作を行う。このような構成によれば、ユーザ端末5が認証リクエストを出す構成において、上述した実施の形態1と同一の効果を達成することができる。

【0043】実施の形態3。この実施の形態3では、図2、図8との対応部分に同一符号を付した図11において、認証サーバ3から転送されてきた認証情報取得S/W11が指定する個人認証情報がユーザの意向に合わない場合、ユーザが該認証情報取得S/Wを拒否する手順（SP2B、SP12A）を示す。取得が拒否された認証サーバ端末3は、他の認証情報取得S/Wを再選択する（SP20A）。ただし、図4について上述したように再選択できる認証情報取得S/Wが他にある場合で

ある。

【0044】バイオメトリクスを個人の認証情報として使用する場合には、指定されたバイオメトリクス取得装置6が不潔なものや不快を伴う場合に、ユーザが拒否ができる必要がある。バイオメトリクスは個人を識別するのに有効であるが、プライバシー保護の問題と上記のように衛生上の問題もあるため、ユーザが拒否又は変更できる機会が必須である。

【0045】またバイオメトリクス取得装置6がセキュリティ的に信用できない場合も、バイオメトリクス情報以外の煩雑ではあってもワンタイムパスワード（OTP）等の代替手段を指定したいという意向があり、ユーザの拒否又は変更の意向に従っても、動的に認証に必要な情報を取得する認証情報取得S/Wを選択することにより、個人の特定と該個人のアクセス権の有無をその環境に応じて確実に判定できる効果を得られる。

【0046】実施の形態4。実施の形態3と同様の効果を得る手段として、実施の形態1、2の認証情報取得S/W自体に取得認証情報の選択機構が含まれる。実施の形態1の例では選択できる認証情報取得S/WはDの指紋と筆跡情報で認証実施するものも、Dの指紋のみで認証するものが選択できる。このとき認証サーバはDとE両方の認証情報取得機能を兼ね備えた認証情報取得S/Wを転送するところがある。

【0047】Webシステム1自体の構成や動作手順は、実施の形態1、2と同様である。ユーザ側での認証情報取得S/Wの画面イメージを図12に示す。ユーザはD/Eからどちらかを選択して、認証手段と自分自身の認証情報の取得を行う。画面の選択ボタン12A、12Bの何れかを選択すると認証情報取得S/Wが動作して、実際に選択された認証情報の取得を行う。認証サーバ端末3では送られてきた認証情報の種別と共に、送られてきた情報の組で認証可能かを判断でき、実施の形態3と同様の効果を得ることができる。

【0048】実施の形態5。上述の実施の形態1～4では、認証情報取得S/Wによって取得する認証情報が決定されていたが、認証情報取得S/Wではなく画面に取得する認証情報が示されるだけのようにしても良い。例えば実施の形態1の詳細データベースの認証回数の中には、画面に指紋情報と筆跡情報を送るように表示する。これによりユーザが表示された内容に従って自動的に認証情報を取得するソフトウェア等を動作させて、取得した認証情報を認証サーバ3に送る。

【0049】また、表示で具体的に示されず、予め決められた認証情報を送付するよう表示するようにしても良い。この場合はユーザの記憶によって予め事前に別途ユーザに対して、管理者等から通知されている全ての認証情報を、ユーザは自動的に認証情報を取得するソフトウェア等を動作させて、取得した認証情報を認証サーバ3に送る。このようにすれば上述の実施の形態1と同様の効

果を実現できるが、表示では具体的に示されず決められた認証情報を送付する場合に、取得する手段がパスワード的な扱いとなるため、セキュリティを一段と向上できる。

【0050】なお上述の実施の形態1～4においては、Webサーバ端末4において、ユーザの個人認証を行う場合について述べたが、この発明はこれに限らず、例えばネットワークに接続された入室端末装置等のように、ユーザの個人認証が必要な制御装置一般に広く適用できる。

【0051】

【発明の効果】上述の通りこの発明によれば、認証サーバは、バイオメトリクス情報により認証を行う際に、ユーザのバイオメトリクス情報の取得環境に応じて、バイオメトリクス取得装置と認証情報を自由に選択し取得するができ、かくして確実にユーザの特定とそのユーザのアクセス権の有無を判定し得る遠隔認証システムを実現できる。

【0052】またユーザは指定された認証情報の取得について不満があった場合に、取得する認証情報を変更や拒否することができ、バイオメトリクス取得装置が不潔等では不快感を伴う場合やバイオメトリクス情報を取得する装置が信頼できない場合でも、代替手段で確実にかくして確実にユーザの特定とそのユーザのアクセス権の有無を判定できる。

【図面の簡単な説明】

【図1】 この発明による遠隔認証システムを適用したWebシステムの実施の形態1の構成を示すブロック図である。

【図2】 図1のWebシステムにおける認証処理の説明に供するタイミングチャートである。

【図3】 図1の認証サーバ端末における認証情報データベースの実施例1の説明に供する図表である。

【図4】 図1の認証サーバ端末における認証情報データベースの実施例1の説明に供する図表である。

【図5】 図1の認証サーバ端末における認証情報データベースの実施例2の説明に供する図表である。

【図6】 図1の認証サーバ端末における認証情報データベースの実施例2の説明に供する図表である。

【図7】 図1の認証サーバ端末における認証情報データベースの実施例3の説明に供する図表である。

【図8】 図1のWebシステムにおける実施例3の認証処理の説明に供するタイミングチャートである。

【図9】 この発明による遠隔認証システムを適用したWebシステムの実施の形態2の構成を示すブロック図である。

【図10】 図9のWebシステムにおける認証処理の説明に供するタイミングチャートである。

【図11】 図1のWebシステムにおける認証処理の実施の形態3として拒否が発生した場合の説明に供するタイミングチャートである。

【図12】 図1のWebシステムの実施の形態4として認証情報取得S/Wの表示画面の説明に供する略線図である。

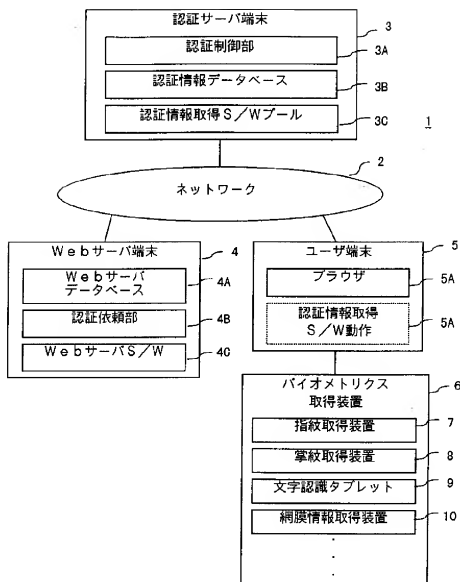
【符号の説明】

- 1 Webシステム
- 2 ネットワーク
- 3 認証サーバ端末
- 3A 認証制御部
- 3B 認証情報データベース
- 3C 認証情報取得ソフトウェアアプルー
- 4 Webサーバ端末
- 4A Webサーバデータベース
- 4B 認証依頼部
- 4C Webサーバソフトウェア
- 5 ユーザ端末
- 5A ブラウザ
- 5B 認証情報取得ソフトウェア動作
- 6 バイオメトリクス取得装置
- 7 指紋取得装置
- 8 掌紋取得装置
- 9 文字認識タブレット
- 10 網膜情報取得装置
- 11 認証情報取得ソフトウェア

【図3】

| | | | | |
|--------|------------------------------------|---|-----|-----|
| ユーザID | 1 {名前、会社、社員番号、所属、住所、電話、など} | 2 | ... | ... |
| ユーザレベル | 2 | | | |
| 認証情報 | {指紋1、指紋2、掌紋、網膜、パスワード、ワンタイムパスワード情報} | | | |

【図1】



【図4】

| レベル | データ種別 | 認証情報取得S/W |
|----------|-------|-----------|
| 1 (最高機密) | 1~10 | A, B, C |
| 2 | 11~20 | D, E, F |
| 3 | 21~30 | G, H |

A : 指紋と網膜
 B : 指紋2指
 C : 網膜と掌紋
 D : 指紋と掌紋
 E : 指紋
 F : 掌紋
 G : ワンタイムパスワード
 H : パスワード

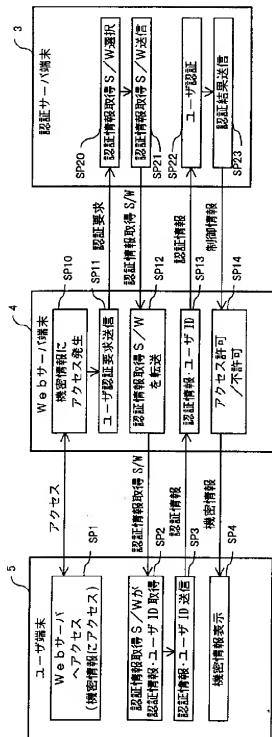
【図5】

| 認証クライアントID | 認証情報取得S/W |
|------------|-----------|
| | |
| | E, F |
| 15 | C, D, E |
| | A, B, C |
| | D, E, F |
| | G, H |

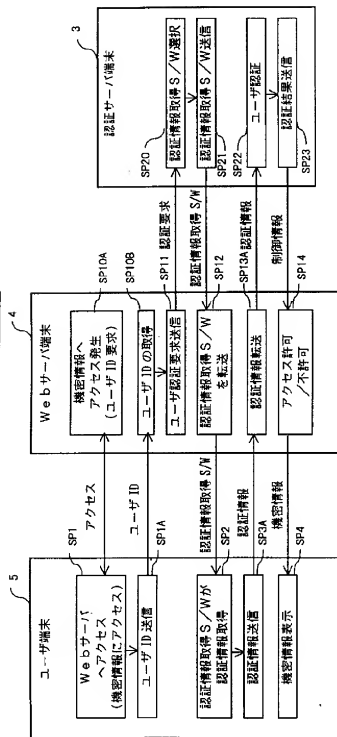
【図6】

| アプリケーションID | 認証情報取得S/W |
|------------|------------|
| | |
| | C, E, G |
| 25 | A, D, E, F |
| | E, F |
| | G, H |

【図2】



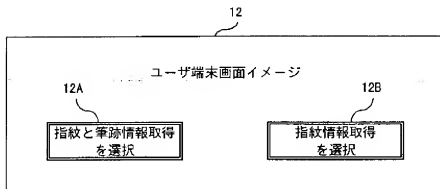
【図3】



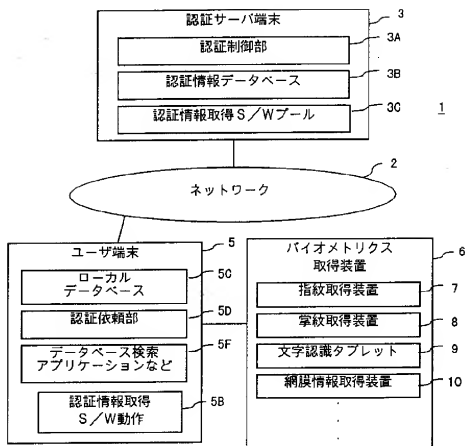
【図 7】

| | | | | |
|------------------|--|---|-----|-----|
| ユーザ ID | 1 {名前、会社、社員番号、所属、住所、電話、など} | 2 | ... | ... |
| ユーザ種別 | 一般 | | | |
| ユーザレベル | 2 | | | |
| 使用できるクライアント ID | 10,15 | | | |
| 使用できるアプリケーション ID | 8,25,36 | | | |
| アプリケーション制御情報 | key-1 | | | |
| 認証情報 | {指紋 1、指紋 2、筆跡、網膜、パスワード、ワンタイムパスワード情報} | | | |
| 照合ログ | 前回 : 認証情報取得 S / W E 選択, 照合評価 90%, 指紋 1=90% 前々回 : 認証情報取得 S / W D 選択, 照合評価 75% 指紋 2=80%, 筆跡=70% . . . | | | |
| 総認証回数 | 20 | | | |
| 選択基準 | 総認証回数 (他例 : 照合率) | | | |

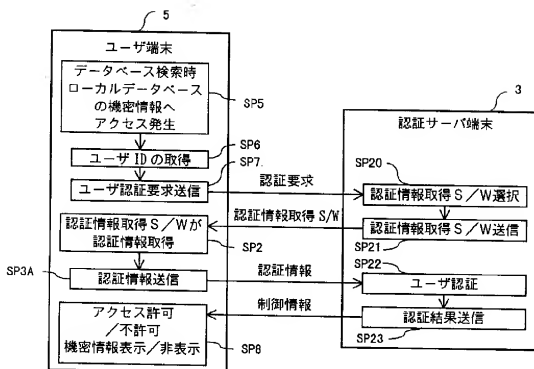
【図 12】

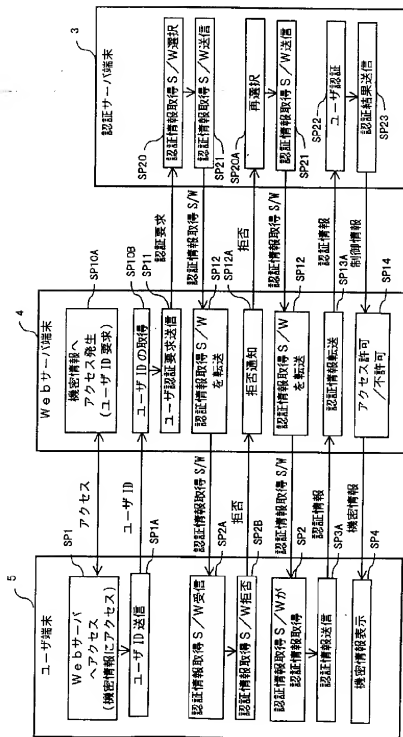


【図9】



【図10】





フロントページの続き

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